Curriculum Vitae:

Panagiotis Spentzouris

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Education:

1990-1994 Ph.D., Physics, NORTHWESTERN UNIVERSITY, Evanston, IL.
Experiment: E665, Fermilab.
Thesis: "Measurement of the cross-section ratio σ_n/σ_p in muon-nucleon scattering at 465 Gev/c."
Advisor: Prof. Heidi Schellman.

1982-1987 Physics Diploma, UNIVERSITY OF ATHENS, GREECE.
Experiment: DELPHI, CERN.
Thesis: "Fast Monte Carlo for simulating events at the BARREL RICH detector of DELPHI."
Advisor: Prof. Christine Kourkoumelis.

Professional Experience:

2014-present Head, Fermi National Accelerator Lab (Fermilab) Scientific Computing Division (SCD).
2013-2014 Associate Head, Fermilab SCD, Systems for Scientific Applications Quadrant.
2007-present Senior Scientist, Fermilab.
Research Activities: Computational Physics, Accelerator Science, Neutrinos, Quantum Computing.
2006-2016 Leading PI, Community Petascale Project for Accelerator Science and Simulation (ComPASS).
2007-2013 Department Head, Accelerator and Detector Simulation and Support, Fermilab Computing Division (CD).
2005-2007 Group Leader, Computational Physics for Accelerators, Fermilab CD.
2000-2005 Group Leader, Simulation Group, Fermilab CD.
2003-2007 Scientist, Fermilab.
Research Activities: Accelerator Science, Neutrino Physics.
1998-2003 Associate Scientist, Fermilab.
Research Activities: Neutrino Factory, Neutrinos with the NuTeV and MiniBooNE experiments, collective effects in particle accelerators.
1994-1998 Postdoctoral Research Associate, Columbia University
Research Activities: NuTeV experiment, first Next to Leading Order measurement of the strange quark sea from neutrino di-muon events.

Awards:

2012-2016 DOE SciDAC3* grant recipient (ComPASS)
2007-2012 DOE SciDAC2 grant recipient (ComPASS)
2001-2006 DOE SciDAC grant recipient (AST).

* *Scientific Discovery through Advanced Computing (SciDAC)*

Management Experience:

2014-present Head, Scientific Computing Division (SCD), Fermilab.
Leading teams of Scientists and Computing Professionals to support Scientific Computing at the laboratory. This includes computing and storage facility and operations, workflow management, software deployment and support, R&D for these activities, and exploration of new technologies. Developed and implemented a common software and facility services model across all experiments and programs, unique in the Office of Science. Developed strategy and architecture for Facility on-demand services and commissioned project to develop and deploy it (HEPCloud).

2013-2014 Leader, Systems for Scientific Applications SCD Quadrant.
Led teams of Scientists and Computing Professionals to support the Fermilab program in the areas of software frameworks, simulation, generators, and data acquisition and in performing the necessary R&D to maintain these competencies as computing technologies evolve. Established a common software solution strategy across experiments and programs.

2007-2013 Department Head, Accelerator and Detector Simulation and Support, CD.
Led teams of Scientists and Computing Professionals in providing software frameworks support for the Intensity Frontier program and simulation, generators, and data acquisition support for the entire program. Generated and oversaw the R&D projects necessary to evolve these scientific computing tools to take advantage of emerging computing architectures and technologies.

2005-2007 Group Leader, Computational Physics for Accelerators, CD.
Led a team of Scientists and Computing Professionals to develop and apply accelerator-modeling tools, with emphasis on high-intensity beam dynamics effects and High-Performance-Computing.

2000-2005 Group Leader, Simulation Group, CD.
Led a team of Scientists and Computing Professionals in providing detector simulation and event generator support to Fermilab experiments. Established the Fermilab High-Performance-Computing accelerator modeling program with focus on multi-particle dynamics, leveraging SciDAC funding.

Research Experience:

Quantum Computing 2017-present.

Working on developing classical/quantum hybrid computing approaches and quantum algorithms for solving reduced physics models to study scaling, error robustness, and potential for full scale applications in the future.

Accelerator Physics 2012-2016.

Leading PI of the multi-institution ComPASS project, which was awarded a SciDAC3 grant. Led the Synergia team in studying coherent instabilities at the FNAL Booster for the Proton Improvement Plan (PIP) and beam losses and loss mitigations at the Recycler and Main Injector toward 700 kW operations. Led a FNAL and UCLA team that designed an affordable proton-driven plasma acceleration demonstrator utilizing a high-dispersion section of the decommissioned Tevatron accelerator and the final focus quads of the CDF experiment.

Accelerator Physics 2006-2012.

Leading PI of ComPASS, a SciDAC2 funded multi-institution project. Oversaw the expansion of the collaboration to include Nuclear Physics and Basic Energy Science applications in addition to HEP. ComPASS applications had significant impact both on the design of future accelerators and on improving the performance of existing machines. Led the Synergia team in improving physics models and code performance; applications focused on Main Injector improvements for Project-X and Booster loss control and mitigation for the FNAL PIP.

Accelerator Physics 2001-2006.

Fermilab PI of the Accelerator Science and Technology (AST) project, a SciDAC funded accelerator-modeling project. Led the Fermilab group in developing Synergia, the first fully 3D parallel space charge code with circular accelerator modeling capabilities. Designed and performed controlled beam studies with the Fermilab Booster to validate the simulation code. Designed the calibration technique and led beam studies to calibrate the Booster Ionization Profile Monitor detectors. Performed beam studies and modeling to optimize Booster operational parameters. Led the Fermilab team in developing the first fully 3D parallel beam-beam and impedance simulation application for the Tevatron, used to improve operations.

MiniBooNE Software 2002-2004.

Offline software group co-convener. Developed the offline computing blueprint and supervised its implementation, leveraging and extending existing infrastructure developed for the collider program (RunII).

Muon Collider, Neutrino Factory Design 2000-2002.

Design and optimization of ionization cooling channels based on long solenoids, with realistic engineering constraints. Modeled and optimized the design of a magnetized Fe-Scintilator detector for neutrino oscillation measurements. Developed high-performance computing ionization cooling simulations, including space charge effects.

Muon Collider, Neutrino Factory Design 1998-2000.

Performed simulation studies and developed muon beam cooling techniques. Developed software tools for design optimization of ionization cooling channels. Designed and simulated cooling channels based on lithium lenses and solenoids. Performed detector simulation studies for muon collider experiments.

NuTeV Physics Analysis 1994-2006.

Measured the charm production cross-section using dimuon events from neutrino nucleon scattering; convener of the analysis group. We obtained the most precise measurement of neutrino-induced dimuon cross-section to date, and the first Next to Leading Order pQCD extraction of the strange and anti-strange sea from such events.

NuTeV Calibration 1994-1998.

Determined the absolute spectrometer momentum scale from Test Beam data.

NuTeV Detector Operation 1994-1997.

In charge of commissioning the NuTeV detector for the 1996 fixed target run.

NuTeV Reconstruction Software 1994-1996.

Offline software coordinator. The software was released before the beginning of the data taking run, enabling online data quality monitoring and timely physics analysis of the data.

NuTeV Beamline 1995.

Participated in the design of the neutrino beamline. Over-saw the installation of sections of the beamline.

Research Experience, con't:

E665 Analysis 1993-1994.
Implemented radiative correction techniques using both the EM calorimeter and theoretical calculations. Measured cross-section ratio σ_n/σ_p down to $x_{bj} \sim 10^{-6}$, for the first time in μ-N Deep Inelastic Scattering.

E665 Alignment 1992-1993.
Developed the technique, wrote the software and aligned the high precision tracking chambers for the '90 and '91 run periods.

E665 Reconstruction 1993.
Determined cross-section normalization and developed database software for this purpose. Designed and implemented the DST software.

E665 Calibration 1990-1992.
Analyzed proton calibration data. Energy scale for the beam and forward spectrometers determined to better than 0.5%. Designed and implemented the normalization scaler system, essential to the absolute cross-section measurements.

E771 Silicon Strip Detector 1989-1990.
Wrote diagnostic software for the Fastbus readout system. Tested and debugged the prototype readout system.

DELPHI BRICH 1987-1989.
Participated in the design, construction and testing of the Barrel Ring Imaging Cerenkov calibration system.

DELPHI Monte Carlo 1986-1987.
Wrote Fast Monte Carlo Simulation for the Barrel Ring Imaging Cerenkov detector.

Professional Service:

Fermilab LDRD Advisory Committee, 2013-present

Fermilab Scientific Advisory Committee, 2013-2015

Expert Committee Review for the Canada Foundation for Innovation (NSE), 2015

Snowmass 2013, Computing Frontier Accelerator Science co-convener

Computing HEP conference (CHEP) 2013, International Advisory Committee

DOE HEP, ASCR and NP proposal reviewer, 2005-present

Accelerator Science SBIR reviewer selection committee, 2012

SciDAC Conference Organizing Committee, 2008, 2010

Advanced Accelerator Concepts Scientific Program committee, 2009-2010

Journal Referee for PRSTAB, JCP, NIM, 2008-present

Particle Accelerator Conference '09 Scientific Program Committee, 2008-2009

NSF Career Proposal Reviewer, 2008-present

Workshop on "Scientific challenges for understanding the quantum universe and the role of computing at extreme scale", Organizing Committee, 2008

US Particle Accelerator School Instructor, "Modern Computational Accelerator Physics", Jan 2007, Jan 2011

Particle Accelerator Conference '07 Program Committee, April 2006-June 2007

Fermilab hiring committees, served on or chaired searches, 2001-present

Fermilab's Computer Security Program Review Committee, 2003

Co-convener of the Long Baseline Oscillation Working Group, Conference on Underground Science, 2001

Co-convener of the High Performance Computing Accelerator Simulation Working Group, Snowmass 2001

Professional Service, con't:

NuMI beamline upgrade (Hadronic Hose) Review Committee, 2000

Reviewer for the Kansas DOE-EPSCoR program, 1999-2000

DOE Strategic Simulation Initiative meeting, co-authored Accelerator Modeling report, 1999

Co-organizer of the 1st Workshop on the Potential for Neutrino Physics at Future Muon Colliders, August 1998

Convener of the Non-Oscillation Neutrino Physics working group, Workshop on Fixed Target Physics at the Main Injector, May 1997

PhD students:

Maxim Goncharov, Kansas State University, NuTeV. Fermilab advisor.
Graduated 2001.

David Mason, Oregon University, NuTeV. Fermilab advisor.
Graduated 2007.

Daniel McCarron, Illinois Institute of Technology,
Fermilab Accelerator PhD Program thesis
advisor. Graduated 2010.

Non-doctoral students:

Supervised ~10 summer students 1998-2008.

Selected Publications:

- "Parametric Landau damping of space charge modes", Alexandru Macridin, Alexey Burov, Eric Stern, James Amundson, Panagiotis Spentzouris., **Phys. Rev. Accel. Beams 21, 2018**.
- "HEPCloud, a New Paradigm for HEP Facilities: CMS Amazon Web Services Investigation", Burt Holzman et al. Comput.Softw.Big Sci. 1 (2017) no.1, 1.
- "Design and Construction of the MicroBooNE Detector", By MicroBooNE Collaboration (R. Acciarri et al.). **JINST** 12 (2017) no.02, P02017.
- "Convolutional Neural Networks Applied to Neutrino Events in a Liquid Argon Time Projection Chamber", By MicroBooNE Collaboration (R. Acciarri et al.) **JINST** 12 (2017) no.03, P03011.
- "Simulation of Transverse Modes with Their Intrinsic Landau Damping for Bunched Beams in the Presence of Space Charge", A. Macridin, A. Burov, E. Stern, J. Amundson, and P. Spentzouris, **Phys. Rev. ST Accel. Beams, vol. 18, 074401, 2015.**
- "Nonperturbative algorithm for the resistive wall impedance of general cross-section beam pipes," A. Macridin, P. Spentzouris, and J. Amundson, **Phys. Rev. ST Accel. Beams, vol. 16, 121001, 2013.**
- "Snowmass 2013 Computing Frontier: Accelerator Science", P. Spentzouris, E. Cormier-Michel, C. Joshi, J. Amundson, W. An, D.L. Bruhwiler, J.R. Cary, B. Cowan et al., **arXiv:1310.2203 [physics.acc-ph].**
- "Simulation of the Electron Flux into the Main Injector Electron Cloud Retarding Field Analyzer Using Vorpal", Paul L.G. Lebrun, James F. Amundson, Panagiotis G. Spentzouris, Seth A. Veitzer and Peter Stoltz, **The Open Plasma Physics Journal, 2013, 6, 1-5 1**
- "PROTOPLASMA - Proton-Driven Plasma-Wakefield Experiment at Fermilab: Stages and Approach", J.C.T. Thangaraj, C.S. Park, J.D. Lewis, P. Spentzouris, W. An, W. Mori, C. Joshi. 10.1063/1.4773773. **AIP Conf.Proc. 1507 (2012) 644-649.**
- "Dual baseline search for muon neutrino disappearance at $0.5 eV^2 < Delta m^2 < 40 eV^2", By SciBooNE and MiniBooNE Collaborations (K.B.M. Mahn et al.), **Phys.Rev. D85 (2012) 032007**
- "Coupling impedance and wake functions for laminated structures with an application to the Fermilab Booster," A. Macridin, P. Spentzouris, J. Amundson, L. Spentzouris, and D. McCarron, **Phys.Rev.ST Accel.Beams. vol.14, p.061003, 2011.**

Publications, cont'd:

- "Measurement of Neutrino-Induced Charged-Current Charged Pion Production Cross Sections on Mineral Oil at $E_\nu \sim 1$ *GeV*." By MiniBooNE Collaboration (A.A. Aguilar-Arevalo *et al.*), **Phys. Rev. D83:052007, 2011**.

- "Measurement of nu_mu-induced charged-current neutral pion production cross sections on mineral oil at E_ν 0.5-2.0 *GeV*". By MiniBooNE Collaboration (A.A. Aguilar-Arevalo *et al.*)." **Phys. Rev. D83:052009, 2011**.

- "Fully 3D Multiple Beam Dynamics Processes Simulation for the Tevatron." E.G. Stern, J.F. Amundson, P.G. Spentzouris, A.A. Valishev, (Fermilab) . **Phys. Rev. ST Accel. Beams 13:024401, 2010**.

- "Measurement of the ν_μ charged current π^+ to quasi-elastic cross section ratio on mineral oil in a 0.8-GeV neutrino beam." By MiniBooNE Collaboration (A.A. Aguilar-Arevalo *et al.*), **Phys. Rev. Lett.103:081801, 2009**

- "AAC 2010, Summary report of working group 2: Computation", W.B. Mori, P. Spentzouris.10.1063/1.3520428, **AIP Conf.Proc. 1299 (2010) 88-91.**

- "A Search for muon neutrino and antineutrino disappearance in MiniBooNE. By MiniBooNE Collaboration." (Alexis A. Aguilar-Arevalo *et al.*), **Phys. Rev. Lett. 103:061802,2009**.

- "Unexplained Excess of Electron-Like Events From a 1-GeV Neutrino Beam." By MiniBooNE Collaboration (A.A. Aguilar-Arevalo *et al.*). **Phys. Rev. Lett. 102:101802, 2009**.

- "First Measurement of ν_μ and ν_e Events in an Off-Axis Horn-Focused Neutrino Beam." By MiniBooNE and Minos Collaboration (P. Adamson *et al.*). **Phys. Rev. Lett. 102:211801, 2009**.

- "Measurement of muon neutrino quasi-elastic scattering on carbon. By MiniBooNE Collaboration **(A.A. Aguilar-Arevalo *et al.*)." Phys. Rev. Lett.100:032301, 2008.**

- "Community petascale project for accelerator science and simulation: Advancing computational science for future accelerators and accelerator technologies," P. Spentzouris et al. , **J. Phys. Conf. Ser. , vol. 125, p. 012005, 2008.**

- "Measurement of the Nucleon Strange-Antistrange Asymmetry at Next-to-Leading Order in QCD from NuTeV Dimuon Data." D. Mason *et al.* **Phys. Rev. Lett. 99:192001, 2007**.

Publications, cont'd:

- "A Search for electron neutrino appearance at the Delta m**2 ~ 1- eV**2 scale," MiniBooNE Collaboration (A.A. Aguilar-Arevalo et al.), **Phys. Rev. Lett.98:231801,2007**.
- "An Experimentally Robust Technique For Halo Measurement Using The IPM At The Fermilab Booster," J. Amundson, W. Pellico, P. Spentzouris, T. Sullivan, Linda Spentzouris, **Nucl. Instrum. Meth., A570, 1 (2007)**
- "Benchmarking in the Synergia framework," P. Spentzouris, ICFA Beam Dyn.Newslett.41:52-61,2006.
- "Measurements and Synergia simulations of emittance dilution at the Fermilab Booster." P. Spentzouris, J. Amundson, W. Pellico, (Fermilab) , D. McCarron, (IIT, Chicago). FERMILAB-CONF-06-552-APC-CD, May 2006. 5pp. Published in *Tsukuba 2006, High intensity high brightness hadron beams* 236-240
- "Community petascale project for accelerator science and simulation: Advancing computational science for future accelerators and accelerator technologies**."** P. Spentzouris, (Fermilab) , J. Cary, (Tech-X, Boulder) , L.C. McInnes, (Argonne) , W. Mori, (UCLA) , C. Ng, (SLAC) , E. Ng, R. Ryne, (LBL, Berkeley) . FERMILAB-CONF-08-220-APC-CD, 2008. 14pp. Published in **J.Phys.Conf.Ser.125:012005,2008**.
- ``Accelerator modeling under SciDAC: meeting the challenges of next-generation accelerator design, analysis, and optimization", P. Spentzouris, http://bel.gsi.de/icap2006/PAPERS/THMPMP03.PDF, 9th International Computational Accelerator Physics Conference, ICAP06.
- ``Emittance dilution and halo creation during the first milliseconds after injection at the Fermilab Booster," Panagiotis Spentzouris, J. Amundson, Prepared for 33rd ICFA Advanced Beam Dynamics Workshop: High Intensity High Brightness Hadron Beams (ICFA HB2004), AIP Conf.Proc.773:127-131,2005.
- "Space charge experiments and simulation in the Fermilab Booster," J. Amundson and P.Spentzouris, FERMILAB-CONF-05-162-CD, Particle Accelerator Conference (PAC 05).
- "Benchmarking of Simulation Codes Based on the Montague Resonance in the CERN-PS," I. Hofmann, G. Franchetti, A.U. Luccio, M. Giovannozzi, E Mtral, J.F. Amundson, P. Spentzouris, S. Machida, J. Qiang, R. Ryne, S. M. Cousineau, J. A. Holmes, and F. Jones, Particle Accelerator Conference, PAC-2005-MOPC003.

Publications, cont'd:

- "Strange sea asymmetry results from NuTeV," P. Spentzouris,12th International Workshop on Deep Inelastic Scattering, in *Strbske Pleso 2004, Deep inelastic scattering* 846-849

- "Synergia: An accelerator modeling tool with 3-D space charge," J. F. Amundson, P. Spentzouris, J. Qiang and R. Ryne, FERMILAB-PUB-04-136-CD, J. Comput. Phys. 211, 229 (2006)

- "Calibration of the Fermilab Booster ionization profile monitor," J. Amundson, J. Lackey, P. Spentzouris, G. Jungman, and L. Spentzouris, Phys. Rev. ST Accel. Beams 6, 102801 (2003)

- "SYNERGIA: a hybrid, parallel beam dynamics code with 3d space charge," J. Amundson, P. Spentzouris, FERMILAB-CONF-03-126-E, Jul 2003, Particle Accelerator Conference (PAC 03).

- "FNAL Booster: experiment and modeling," P. Spentzouris, J. Amundson, FERMILAB-CONF-03-127, Jun 2003, Particle Accelerator Conference (PAC 03)

- "Precision Electroweak Measurements From Nutev," P. Spentzouris [NuTeV Collaboration], Acta Phys. Polon. B 33, 3843 (2002).

- "On the effect of asymmetric strange seas and isospin-violating parton distribution functions on sin**2(Theta(W)) measured in the NuTeV experiment," G. P. Zeller et al. [NuTeV Collaboration], Phys. Rev. D 65,111103 (2002)

- "A search for nu/mu $\rightarrow$ nu/e and anti-nu/mu ® anti-nu/e oscillations at NuTeV," By NuTeV Collaboration (S. Avvakumov et al.), Phys.Rev.Lett.89:011804,2002

- " A precise determination of electroweak parameters in neutrino nucleon scattering," By NuTeV Collaboration (G.P. Zeller et al.), Phys.Rev.Lett.88:091802,2002

- "Results from NUTEV and CCFR." By CCFR/NuTeV Collaboration (P. Spentzouris, et al.), La Thuile 2001, Results and perspectives in particle physics, March 2001

- "Experiments at Fermilab after MINOS," P. Spentzouris, Nucl. Phys. Proc. Suppl.100:204-206,2001.

- "Short Baseline Projects," P. Spentzouris, Nucl. Phys. Proc. Suppl.100:163-168,2001

Publications, cont'd:

- "Report of the Snowmass T7 working group on high performance computing," K. Ko R. Ryne, P. Spentzouris, SLAC-PUB-9477, SNOWMASS-2001-T7001, Jun 2001.

- "Double field flip cooling channel for the neutrino factory," V. Balbekov, V.D. Elvira, P. Lebrun, J.M. Rey, P. Spentzouris (Fermilab), E. Black (IIT, Chicago). FERMILAB-CONF-01-182-T, Jun 2001.

- "GEANT4 simulation and theoretical studies of a helical cooling channel," V. Balbekov, V.D. Elvira, P. Lebrun, P. Spentzouris (Fermilab), FERMILAB-CONF-01-181-T, Jun 2001.

- "Design and simulation of muon ionization cooling channels for the Fermilab neutrino factory feasibility study," J. Monroe, P. Spentzouris, V. Balbekov, P. Lebrun (Fermilab), G. Penn, C. Kim, E.S. Kim (LBL, Berkeley), D.M. Kaplan (IIT, Chicago), Phys.Rev.ST Accel.Beams 4:041301,2001

- "Observation of an anomalous number of dimuon events in a high-energy neutrino beam.", By NuTeV Collaboration (T. Adams et al.), Phys.Rev.Lett.87:041801,2001

- "SEARCH FOR THE LEPTON NUMBER VIOLATING PROCESS $\nu_\mu e \rightarrow \mu \nu_e$.", NuTeV Collaboration (J.A. Formaggio et al.), Phys.Rev.Lett.87:071803,2001

- "Precise measurement of dimuon production cross-sections in ν_μ-Fe and $\bar{\nu}_\mu$-Fe deep inelastic scattering at the tevatron.", By NuTeV Collaboration (M. Goncharov et al.), Phys.Rev.D64:112006,2001

- "A first measurement of low x low q^2 structure functions in neutrino scattering", By CCFR Collaboration and NuTeV Collaboration (B.T. Fleming et al.), Phys.Rev.Lett.86:5430-5433,2001

- "Measurements of F_2 AND xF^{ν}_3- xF^{ν}_3 from CCFR ν_μ-Fe and $\bar{\nu}_\mu$-Fe data in a physics model independent way.", By CCFR/NuTeV Collaboration (Un-Ki Yang et al.), Phys.Rev.Lett.86:2742-2745,2001

Publications, cont'd:

- "Observation of neutral current charm production in ν_μ-Fe scattering at the Tevatron.", By NuTeV Collaboration (A. Alton et al.), Phys.Rev.D64:012002,2001
- "Search for light to heavy quark flavor changing neutral currents in ν_μ-N and ν_μ-N scattering at the Tevatron.", By NuTeV Collaboration (A. Alton et al.), Phys.Rev.D63:012001,2001
- "A feasibility study of a neutrino source based on a muon storage ring," By N. Holtkamp, (ed.), D.A. Finley, (ed.), et al., FERMILAB-PUB-00-108-E, Jun 2000, Phys.Rev.ST Accel.Beams
- "Search for a 33.9-Mev/c**2 neutral particle in pion decay", J.A. Formaggio et al., Phys.Rev.Lett.84:4043-4046,2000
- "Lambda and anti-lambda polarization from deep inelastic muon scattering.", By E665 Collaboration (M.R. Adams et al.), Eur.Phys.J.C17:263-267,2000
- "Evidence for diffractive charm production in muon neutrino Fe and anti-muon neutrino Fe scattering at the tevatron.", By NuTeV Collaboration (T. Adams et al.), Phys.Rev.D61:092001,2000
- "Precision calibration of the nutev calorimeter.", By NuTeV Collaboration (D.A. Harris et al.), Nucl.Instrum.Meth.A447:377-415,2000
- "Neutrino physics with a muon collider.", P. Spentzouris, Nucl. Phys. Proc. Suppl. 77:276-284,1999
- "Nuclear structure functions in the large x large q**2 kinematic region in neutrino deep inelastic scattering.", By CCFR Collaboration (M. Vakili et al.), Phys.Rev.D61:052003,2000
- "Design and Simulation studies of an Ionization Cooling channel using lithium lenses and solenoid transport channels.", P. Spentzouris and D.Neuffer, THP 56, Proc. 1999 PAC, 1999.
- "The design of a liquid lithium lens for a muon collider.", A. Hassanein et al., ANL-HEP-CP-99-29, Mar 1999.

Publications, cont'd:

- "Search for neutral heavy leptons in a high-energy neutrino beam.", By E815 Collaboration (A. Vaitaitis et al.), Phys.Rev.Lett.83:4943-4946,1999

- "A high statistics search for neutrino(e) (anti-neutrino(e)) to neutrino(tau) (anti-neutrino(tau)) oscillations." By CCFR/NuTeV Collaboration (D. Naples et al.). Phys.Rev.D59:031101,1999

- "A measurement of alpha(s)(q**2) from the Gross-Llewellyn smith sum rule." by CCFR/NUTEV collaboration (J.H Kim et al.). Phys.Rev.Lett.81:3595-3598,1998

- "Ionization cooling research and development program for a high luminosity muon collider." By Charles M. Ankenbrandt et al. FERMILLAB-P-0904, Apr 1998.

- "Deep inelastic scattering and neutrino physics." By P. Spentzouris (Nevis Labs, Columbia U.). 1997. In Batavia 1997, Physics at the first muon collider 66-81.

- "Inclusive single-particle distributions and transverse momenta of forward produced charged hadrons in mu p scattering at 470-gev." By E665 Collaboration (M.R. Adams et al.). Z.Phys.C76:441-463,1997

- "Tests of a calorimetric technique for measuring the energy of cosmic ray muons in the tev energy range." By NuTeV/CCFR Collaboration (A.P. Chikkatur et al.). Z.Phys.C74:279-290,1997

- "Diffractive production of rho0 (770) mesons in muon proton interactions at 470-gev." By E665 Collaboration (M.R. Adams et al.). Z.Phys.C74:237 261,1997

- "Improved determination of alpha-s from neutrino -nucleon scattering." By CCFR Collaboration (W.G. Seligman et al.). Phys.Rev.Lett.79:1213-1216,1997

- "Structure function results from the ccfr neutrino experiment at the fermilab tevatron.", P. Spentzouris, Particles and fields, vol. 1 541-543

- "A high statistics search for muon-neutrino ($n_\mu \rightarrow n_e$) oscillations in the small mixing angle regime." By CCFR-NuTeV Collaboration (A. Romosan et al.). Phys.Rev.Lett.78:2912-2915,1997

Publications, cont'd:

- "A measurement of r = sigma-l / sigma-t in deep inelastic neutrino - nucleon scattering at the tevatron." By CCFR-NuTeV Collaboration (U.K. Yang et al.). J.Phys.G22:775-780,1996

- "Proton and deuteron structure functions in muon scattering at 470-gev." By E665 Collaboration (M.R. Adams et al.). Phys.Rev.D54:3006-3056,1996

- "Nuclear decay following deep inelastic scattering of 470-gev muons." By E665 Collaboration (M.R. Adams et al.). Phys.Rev.Lett.74:5198-5201,1995

- "Measurement of the structure function ratio F2(n) / F2(p) in muon - nucleon scattering at low x and q^2. By Panagiotis Spentzouris (Northwestern U.). UMI-95-21811-mc (microfiche), Dec 1994. Ph.D.Thesis.

- "A limit on muon-neutrino ($n_\mu \rightarrow n_t$) oscillations from a precision measurement of neutrino - nucleon neutral current interactions." By CCFR-NUTEV Collaboration (K.S. McFarland, Donna Naples et al.). Phys.Rev.Lett.75:3993-3996,1995

- " Shadowing in inelastic scattering of muons on carbon, calcium and lead at low x(bj)." By E665 Collaboration (M.R. Adams et al.), Z.Phys.C67:403-410,1995

- "Extraction of the ratio F2(n) / F2(p) from muon -deuteron and muon - proton scattering at small x and q_2." By E665 Collaboration (M.R. Adams et al.), Phys.Rev.Lett.75:1466-1470,1995

- "Measurement of nuclear transparencies from exclusive rho0 meson production in muon - nucleus scattering at 470-gev." By E665 Collaboration (M.R. Adams et al.), Phys.Rev.Lett.74:1525-1529,1995

- "Structure functions and structure function ratio F2(n) / F2(p) at small x_{bj} and q^2 in muon - nucleon scattering," By E665 Collaboration (Panagiotis Spentzouris, et al.), FERMILAB-CONF-94-220-E, Jul 1994, Published in CIPANP 97:650-653 (QCD161:C64:1994)

- "The calibration system for the delphi barrel RICH detector," By P. Adrianos, E.G. Anassontzis, P. Ioannou, G. Kalkanis, S. Katsanevas, I. Kontaxis, C. Kourkoumelis, S. Nounos, P. Preve, L.K. Resvanis, P. Spentzouris, G. Voulgaris (Athens U., Nucl. Phys. Lab), 1990. Nucl. Instrum. Methods A294 (1990) 424-430.

Publications, cont'd:

• "The DELPHI detector at LEP," By DELPHI Collaboration (P. Aarnio, et al.), Nucl.Instrum.Meth.A303:233-276,1991.

• "Study of the leptonic decays of the Z0 boson," By DELPHI Collaboration (P. Aarnio, et al.), Phys.Lett.B241:425-434,1990

• "Study of hadronic decays of the Z0 boson," BY DELPHI Collaboration (P. Aarnio, et al.), Phys.Lett.B240:271,1990

• "Measurement of the mass and width of the z0 particle from multi -hadronic final states produced in e+ e-annihilations," By Delphi Collaboration (P. Aarnio, et al.), Phys.Lett.B231:539,1989

Selected Presentations at Workshops and Conferences, Seminars:

• HEP Computing Topical Panel, “Accelerator Modeling Status and Future Needs”, Dec 2013

▪ Snowmass 2013, “Accelerator Science”, presentation at the Computing Frontier Working group

▪ SciDAC3 meeting, 2013, “Advanced Computations for HEP Accelerator Science and Technology”

▪ SciDAC11 conference, “ComPASS: Advanced Computing for Accelerator Science and Technology”, 2011

▪ “Accelerator Modeling”, Extreme Scale Computing workshop: scientific challenges for understanding the quantum universe and the role of computing at extreme scale, Dec 2008.

▪ 39th Advanced Beam Dynamics Workshop (HB2006), May 2006, “Measurements and Synergia simulations of emittance dilution at the Fermilab Booster”.

• 9th International Computational Accelerator Physics Conference, Oct 2006, ``Accelerator modeling under SciDAC: meeting the challenges of next-generation accelerator design, analysis, and optimization'', invited talk.

• SciDAC meeting, June 2005, ”Simulation of the Fermilab Booster using Synergia”

• Particle Accelerator Conference 2005, May 2005, “Space charge experiments and simulation in the Fermilab Booster.”

• IFCA-HB2004, October 2004, “Emittance dilution and halo creation during the first milliseconds after injection at the Fermilab Booster”

• CHEP04, September 2004, “SYNERGIA: A MODERN TOOL FOR ACCELERATOR PHYSICS SIMULATION”

• XII International Workshop on Deep Inelastic Scattering Conference, April 2004, “Strange Sea Results from NuTeV”

• Particle Accelerator Conference 2003, May 2003, “SYNERGIA: A HYBRID, PARALLEL BEAM DYNAMICS CODE WITH 3D SPACE CHARGE”

Selected Presentations at Workshops and Conferences, Seminars, con't:

• APS meeting, April 2003, "Computational Challenges in Accelerator Physics," invited talk.

• Physics Colloquium College of William and Mary, February 2003, "Precision Electroweak Measurements from NuTeV"

• 7th International Computational Accelerator Physics Conference, Oct 2002, "Space charge studies and comparison with simulations using the FNAL Booster".

• International Workshop on Neutrinos and Subterranean Science, Sept 2002, "Long Baseline FNAL options".

• X International Workshop on Deep Inelastic Scattering, April-May 2002, "Electroweak results from NuTeV".

• Durham HEP seminar, April 2002, "Strange Sea and Electroweak results from NuTeV".

• LSU Physics Colloquium, January 2002, "Neutrino Experiments at Fermilab".

• Snowmas 2001, July 2001, "Neutrino Physics with underground Labs"

• Snowmas 2001, July 2001, "Beam dynamics modeling needs for neutrino factories and muon colliders'

• Snowmas 2001, July 2001, "Ionization Cooling modeling in the presence of space charge"

• Les XV Recontres de Physique de la Vallee d'Aoste, March 2001, "Charm production and Structure Function results from NuTeV and CCFR", invited
talk.

• Europhysics Neutrino Oscillation Workshop (NOW 2000), Sept 2000, "Experiments at Fermilab after MINOS", invited talk.

Presentations at Workshops and Conferences, Seminars cont'd:

• Europhysics Neutrino Oscillation Workshop (NOW 2000), Sept 2000, "Review of Short Baseline Projects", invited talk.

• Fermilab Joint Experimental-Theoretical Seminar, June 2000, "Charm Production in Neutrino Nucleon Deep Inelastic Scattering at NuTeV".

• NuFact 2000, May 2000, "Cooling Views", invited talk.

• APS meeting, April 2000, "Physics with Muon Storage Rings as Neutrino Factories", invited talk.

• 7th International Symposium on Particles, Strings and Cosmology, December 1999, "Muon Collider Status", invited talk.

• KSU Physics Colloquium, April 1999, "Muon Collider: A potential next generation laboratory for Particle Physics."

• KU Physics Colloquium, April 1999, "Muon Collider: A potential next generation laboratory for Particle Physics."

• Particle Accelerator Conference 1999, March 1999, "Design and Simulation studies of an Ionization Cooling channel using lithium lenses and solenoid transport channels."

• Fermilab Users Annual Meeting, July 1998, "Muon Collider Status".

• Fermilab Joint Experimental-Theoretical Seminar, July 1998, "Neutrino 98 Summary."

• XVIIIth International Conference on Neutrino Physics and Astrophysics, June 1998, "Neutrinos from a Muon Collider."

• Les XII Recontres de Physique de la Vallee d'Aoste, March 1998, "Results from the CCFR and NuTeV Experiments.", invited talk.

• ARGONNE HEP SEMINAR, February 1998, " Studies of Strong Interactions at CCFR/NuTeV."

• KSU HEP Seminar, January 1998, "The strange structure of the nucleon in neutrino-nucleon Deep Inelastic Scattering."

Presentations at Workshops and Conferences, Seminars cont'd:

- Workshop on Physics at the First Muon Collider and at the Front End of a Muon Collider, November 1997. " Deep Inelastic Scattering and Neutrino Physics," invited talk.
- XVI International Workshop on Weak Interactions and Neutrinos, June 1997, "Precision Electroweak results from n - N scattering at CCFR/NuTeV."
- Workshop on Physics with The Main Injector, Fermilab, May 1997. "Non-Oscillation Neutrino Physics with the Fermilab Main Injector", summary talk.
- 5th International Workshop on Deep Inelastic Scattering and QCD, April 1997, "Determination of a_s from Neutrino-Nucleon DIS."
- Workshop on The Strange Structure of the Nucleon, CERN, March, 1997 "Deep-inelastic neutrino-proton scattering," invited talk.
- American Physical Society Division of Particles and Fields, August 1996, "Structure Function Results from the CCFR Neutrino Experiment at the Fermilab Tevatron."
- Fermilab Users Annual meeting, July 14,1995, "Hadron structure functions"
- Fermilab Joint Experimental-Theoretical Seminar, July 1994, "Cross-Section Ratio Measurement s_n/s_p in Muon-Nucleon Scattering at small x and Q^2 "
- Fifth Conference on the Intersections of Particle and Nuclear Physics, St. Petersburg, FL June 1994, " Structure Functions and Structure Function Ratio F_n/F_p at Small-x and Q^2 in Muon-Nucleon Scattering "
- CTEQ WORKSHOP, Fermilab May 1994, " Structure Function Ratio Measurement F_n/F_p and Shadowing in the D_2"
- American Physical Society Meeting, 1994, "Cross-Section Ratio Measurement s_n/s_p in Muon-Nucleon Scattering at small x and Q^2 "
- International Symposium: Recent Developments In Phenomenology, Univ. of Wisconsin, 1994, "Cross-Section Ratio Measurement s_n/s_p in Muon-Nucleon Scattering at small x and Q^2"